One-Year Incidence and Predictors of Homelessness Among 300,000 U.S. Veterans Seen in Specialty Mental Health Care

Jack Tsai

U.S. Department of Veterans Affairs (VA) New England Mental Illness Research, Education, and Clinical Center, West Haven, Connecticut and Yale School of Medicine

Rani A. Hoff

Yale School of Medicine and VA Northeast Program Evaluation Center, West Haven, Connecticut

Ilan Harpaz-Rotem

Yale School of Medicine and VA National Center for Posttraumatic Stress Disorder, West Haven, Connecticut

The Department of Veterans Affairs (VA) is committed to preventing and ending homelessness among U.S. veterans, but there have been few estimates of the incidence of veteran homelessness and prospective studies to identify predictors of homelessness. This study examines the 1-year incidence of homelessness among veterans seen in VA specialty mental health clinics and identified sociodemographic and clinical predictors of homelessness. Using a retrospective cohort study design, data were extracted from the VA medical records of 306,351 veterans referred to anxiety and posttraumatic stress disorder clinics across 130 VA facilities from 2008-2012 and followed for 1 year after referral. Homeless incidence was defined as new use of any VA homeless services or a documented International Classification of Diseases (9th rev.) V60.0 (lack of housing) code during the year. Of the total sample, 5.6% (7.8% for women and 5.4% for men) experienced homelessness within 1 year after referral to VA specialty mental health care. Veterans who were unmarried or diagnosed with a drug use disorder were more than twice as likely to become homeless; those who were Black or had annual incomes less than \$25,000 were more than one and a half times as likely to become homeless. Together, these findings suggest a notable and important percentage of veterans seen in VA specialty mental health clinics newly experience homelessness annually. Monitoring early signs of housing vulnerability and preventing homelessness in this vulnerable but treatment-engaged population may be important in the VA's efforts to end veteran homelessness.

Keywords: veterans, homelessness, incidence, substance abuse

Communities and cities across the United States are working to end homelessness by achieving "functional zero," which means all homeless individuals are provided immediate access to care and services (Cho, 2015). In order to meet this goal, there need to be ways to identify new cases of homelessness and mitigate the factors that lead to homelessness. Homelessness has been a major public health concern for over three decades, but there have been very few prospective or cohort studies of homelessness to pinpoint the incidence of homelessness (Susser, Moore, & Link, 1993; Tsai & Rosenheck, 2015). Unlike prevalence which measures how common a condition exists in a population at a particular time point, incidence measures the rate of

Jack Tsai, U.S. Department of Veterans Affairs (VA) New England Mental Illness Research, Education, and Clinical Center, West Haven, Connecticut and Department of Psychiatry, Yale School of Medicine; Rani A. Hoff, Department of Psychiatry, Yale School of Medicine and VA Northeast Program Evaluation Center, West Haven, Connecticut; Ilan Harpaz-Rotem, Department of Psychiatry, Yale School of Medicine and VA National Center for Posttraumatic Stress Disorder, West Haven, Conceptions

Correspondence concerning this article should be addressed to Jack Tsai, 950 Campbell Avenue, 151D, West Haven, CT 06516. E-mail: Jack.Tsai@yale.edu

occurrence of new cases of the condition over a given time period (Le & Boen, 1995). Examining the incidence of homelessness is often difficult because homelessness is a rare, elusive event and so large sample sizes are required for accurate estimates. Nonetheless, measuring and predicting homeless incidence is essential for primary and secondary prevention.

The U.S. Department of Veterans Affairs (VA) has dedicated substantial resources and created various programs to address homelessness among veterans for over two decades (Rosenheck et al., 1998; Tsai, Kasprow, & Rosenheck, 2013). More recently, in the past 5 years, the VA has spent billions of dollars on a federal initiative to prevent and end veteran homelessness (U.S. Department of Veterans Affairs, 2009). Prevalence estimates of veteran homelessness exist from various sources, including annual point-in-time counts (U.S. Department of Housing & Urban Development, 2013), the Homeless Management Information System provided by regional Continuums of Care (Fargo et al., 2012), and a few epidemiological surveys like the National Vietnam Veterans Readjustment Study (Kulka et al., 1988).

However, there are few estimates of the incidence of veteran homelessness. One notable cohort study using data from the VA and U.S. Department of Defense on 310,685 veterans who served in the military from 2005 to 2006 reported a 5-year homeless incidence of 3.7% after leaving the military (Metraux, Clegg,

Daigh, Culhane, & Kane, 2013). The strongest predictors of homelessness identified were military pay grade, substance use, and psychotic disorders. Another cohort study of formerly homeless veterans found that 44% experienced at least 1 day of homelessness within 5 years after being successfully placed into housing and that drug use and posttraumatic stress disorder were predictors of subsequent homelessness (O'Connell, Kasprow, & Rosenheck, 2008). There has been no previous study of the incidence of homelessness specifically among veterans engaged in VA mental health care. Moreover, there has been increasing concern about the greater risk for homelessness found among female veterans when compared to their nonveteran counterparts (Byrne, Montgomery, & Dichter, 2013; Tsai & Rosenheck, 2015), and so further investigation of homeless incidence by gender is also warranted.

The VA operates the largest health care network in the country and maintains a national integrated electronic medical record system, which allows unique opportunities to examine homeless incidence among veterans. Since a body of studies has shown that veterans with mental illness are at increased risk for homelessness and that the majority of veterans have mental or substance use disorders (Edens, Kasprow, Tsai, & Rosenheck, 2011; Tsai et al., 2013; Tsai & Rosenheck, 2015), we focus on veterans seen in VA mental health clinics in this study with the understanding that they represent a high-risk, accessible population.

Using national VA administrative data on over 300,000 veterans referred to specialty mental health care, we examine the 1-year incidence of homelessness in this population and identified sociodemographic and clinical predictors of homelessness. The results contribute to the sparse literature on homeless incidence among veterans, describe factors that may be used to identify veterans at-risk for homelessness, and highlight important considerations for how VA specialty mental health care may play a role in the prevention of veteran homelessness.

Method

A retrospective cohort study design was used. Administrative data were extracted from the VA medical records of 306,351 veterans referred to specialty mental health clinics across 130 VA facilities from October 1, 2008, to September 31, 2012; data were also extracted on these veterans through the first year after they were referred to mental health clinics to examine the 1-year incidence and predictors of homelessness. These specialty mental health clinics mostly consisted of outpatient anxiety and posttraumatic stress disorder clinics, which included veterans who were screened with the Posttraumatic Stress Disorder Checklist—Military version (PCL-M; Weathers, Huska, & Keane, 1991).

Homelessness was defined as use of any VA homeless services, a documented International Classification of Diseases (9th rev.) V60.0 (Lack of housing) code, or any specialty bed section codes designated for homeless veterans, consistent with previous studies on homelessness using VA administrative data (Edens et al., 2011; Metraux et al., 2013). Therefore, homeless incidence was defined as any new case of homelessness fitting this definition during the follow-up year. Veterans who were already homeless in the year before the follow-up year were not coded as a new incidence. VA homeless services include the umbrella Health Care for the Homeless Veterans program, which provides a range of homeless services for veterans; the Housing and Urban Development–Veterans

Affairs program, which offers veterans rental subsidies and supportive case management to help them acquire and retain permanent housing; and the Grant & Per Diem program, which contracts with community agencies to provide structured transitional housing for homeless veterans to help them achieve residential stability.

Administrative data from medical records included sociodemographic information, clinician-documented psychiatric diagnoses, and PCL-M scores. For this study, we examined total PCL-M scores (which range from 17 to 85), but since we already had records of posttraumatic stress disorder (PTSD) diagnoses, we also focused on several PCL-M items (items 10, 11, 13–15) that assessed general mental health symptoms not specific to PTSD. All study procedures adhered to ethical research guidelines.

Data analyses proceeded as follows. First, descriptive statistics were used to examine the 1-year incidence of homelessness among the total sample and separately by gender and different age groups. Second, bivariate comparisons were conducted between veterans who did and did not become homeless on sociodemographic and clinical characteristics. Given the large sample size and high statistical power to detect even minute differences (i.e., tests on all variables were statistical significant), we focused on effect size measures using Cohen's d for continuous variables and difference in percentage ($\Delta\%$) for categorical variables. Notable effect sizes were defined as $d \ge .30$ or $\Delta\% \ge 10\%$. A Cohen's d value over .30 is a small-to-medium effect size (Cohen, 1977) and 10% of the homeless sample (n = 17,187) is over 1,500 veterans. Third, logistic regression analyses were conducted including notable variables together using a simultaneous entry method to identify variables independently predictive of homelessness. Effect sizes were calculated as odds ratios with 99% confidence intervals.

Results

As Table 1 shows, in the total sample, 5.6% of veterans newly experienced homelessness within a year after referral to VA specialty mental health care. Women were slightly at greater risk for experiencing homelessness compared to men (7.6% vs. 5.4%). Homeless incidence also varied substantially by age. Veterans ages 46–55 years were at highest risk for homelessness compared to veterans of other age groups. In general, the majority of homeless veterans fell within the ages of 26–55. Not shown in Table 1,

Table 1
One-Year Incidence of Homelessness Among Veterans and
Veteran Subgroups in Specialty Mental Health Care

Subgroup	Total N	Homeless (%)	
Gender			
Male veterans	278,057	15,028 (5.4%)	
Female veterans	28,294	2,159 (7.6%)	
Age, years			
17–25	38,181	2,583 (6.8%)	
26–35	54,372	3,536 (6.5%)	
36–45	44,976	3,121 (6.9%)	
46-55	42,344	3,948 (9.3%)	
56–65	82,685	2,154 (2.6%)	
66–75	9,193	116 (1.3%)	
76–85	4,841	17 (0.4%)	
86+	678	5 (0.7%)	
All veterans	306,351	17,187 (5.6%)	

Table 2
Bivariate Comparisons Between Veterans Who Did and Did Not Become Homeless 1 Year Later

Variable	Became homeless $(n = 17,187)$	Remain housed $(n = 289,162)$	Measure of difference Cohen's d or $\Delta\%$	
Age	40.5 (12.8)	45.1 (15.6)	32	
Gender, male	15,028 (87.4%)	263,029 (91.0%)	3.6%	
Marital status				
Married	4,493 (26.1%)	146,618 (50.7%)	-24.6%	
Divorced/widowed	5,771 (33.6%)	64,213 (22.2%)	11.4%	
Never married	6,923 (40.3%)	78,333 (27.1%)	13.2%	
Race/ethnicity				
White	9,052 (52.7%)	175,790 (60.8%)	-8.1%	
Black	4,638 (27.0%)	44,049 (15.2%)	11.8%	
Other	3,497 (20.3%)	69,325 (24.0%)	-3.7%	
Income	\$14,679.5 (24,947.1)	\$27,393.7 (52,004.4)	31	
VA service-connection rating				
0%	12,311 (71.6%)	160,075 (55.4%)	16.2%	
10%-50%	3,434 (20.0%)	75,156 (26.0%)	-6.0%	
50%	1,442 (8.4%)	53,933 (18.7%)	-10.3%	
Geography, metropolitan area	12,639 (73.7%)	185,152 (64.3%)	9.4%	
Psychiatric diagnoses				
Alcohol use disorder	4,933 (28.7%)	36,139 (12.5%)	16.2%	
Drug use disorder	4,753 (27.7%)	22,960 (7.9%)	19.8%	
Schizophrenia/psychotic Disorder	971 (5.6%)	7,224 (2.5%)	3.1%	
Bipolar disorder	1,318 (7.7%)	9,548 (3.3%)	4.4%	
Major depression/dysthymia	8,056 (46.9%)	106,310 (36.8%)	10.1%	
Posttraumatic stress disorder	6,725 (39.1%)	120,035 (41.5%)	-2.4%	
Other anxiety disorder	4,021 (23.4%)	53,300 (18.4%)	5.0%	
Total score PCL score	57.2 (16.0)	53.3 (16.9)	.24	
Sleep difficulties ^a	3.9 (1.3)	3.6 (1.4)	.22	
Socially distant	3.7 (1.3)	3.3 (1.4)	.30	
Emotionally numb	3.3 (1.4)	3.0 (1.4)	.21	
Angry outbursts	3.4 (1.3)	3.3 (1.3)	.08	
Concentration difficulties	3.5 (1.3)	3.3 (1.3)	.15	

Note. Notable differences ($d \ge .30$ or $\Delta\% \ge 10\%$) are in boldfaced type. VA = U.S. Department of Veterans Affairs; PCL = Posttraumatic Stress Disorder Checklist.

among the 122,009 veterans who served in the Iraq and Afghanistan War, 6,399 (5.2%) experienced a new episode of homelessness in the follow-up year.

Table 2 shows bivariate comparisons of sociodemographic and clinical characteristics between veterans who became homeless and those who remained housed. The notable differences ($d \ge .30$ or $\Delta\% \ge 10\%$) show that veterans who became homeless were younger, less likely to be married or have a VA service connection, more likely to be Black instead of White, had lower income, and

were more likely to be diagnosed with alcohol or drug use disorder and major depression/dysthymia than veterans who did not become homeless. Veterans who became homeless also notably reported being more socially distant than those who remained housed. There were no major group differences on total PCL-M scores or on the several PCL-M items that assessed general mental health symptoms.

As shown in Table 3, a logistic regression analysis examining the independent effects of these variables revealed that veterans

Table 3
Multivariable Analyses Predicting Veteran Homelessness by the Total Sample and Separately by Gender

Variable	Total sample		Only males		Only females	
	Odds ratio	99% confidence interval	Odds ratio	99% confidence interval	Odds ratio	99% confidence interval
Age, 46–55 years	1.45	1.38-1.53	1.52	1.43-1.60	1.05	0.91-1.21
Black	1.60	1.53-1.68	1.57	1.49-1.66	1.62	1.43-1.83
Not married	2.20	2.09-2.30	2.21	2.10-2.32	1.68	1.44-1.95
Income under \$25,000	1.66	1.58-1.75	1.64	1.56-1.74	1.75	1.51-2.03
Alcohol use disorder	1.48	1.40-1.56	1.52	1.43-1.61	1.33	1.09-1.62
Drug use disorder	2.48	2.34-2.62	2.48	2.34-2.64	2.67	2.21-3.24
Major depression/dysthymia	1.21	1.16-1.26	1.20	1.14-1.26	1.15	1.02-1.29

^a Select PCL items that assessed general mental health symptoms were included. PCL items are rated on a 5-point scale from 1 (not at all) to 5 (extremely).

with a drug use disorder or who were not married were more than two times more likely to become homeless. Having an annual income of less than \$25,000, being Black, ages 46–55, or having an alcohol use disorder also increased the odds of being homeless by about one and a half times. Supplementary analyses repeating logistic regressions by gender revealed that having a drug use disorder was strongly predictive of homelessness among both male and female veterans. However, being unmarried and ages 46–55 was more predictive of homelessness among males than females. The magnitude of associations between income, race, and homelessness were similar among male and female veterans.

Discussion

Among over 300,000 veterans referred to VA outpatient specialty mental health clinics, 5.6% experienced a new episode of homelessness within a year. There are few existing veteran homeless incidence rates to compare to, but our incidence rate is expectedly higher than the 5-year homeless incidence rate of 3.7% reported for a cohort of veterans who recently separated from the military (Metraux et al., 2013) because our sample consisted of only VA mental health service users. It may also be useful to consider our incidence rate in the context of the estimated prevalence of homelessness in this population. One study of over one million veterans who received VA mental health services reported that 10% were homeless in a given year (Edens et al., 2011). Therefore, the relatively high incidence rate we found compared to the estimated prevalence suggests that homelessness among veterans in VA mental health clinics occurs quite frequently, but often not for an extended duration.

Women veterans were found to have a slightly higher incidence of homelessness than men, which supports growing concerns about homelessness among female veterans (Byrne et al., 2013; Tsai & Rosenheck, 2015). The VA has begun to develop services that are better suited for homeless female veterans and their children, such as the Supportive Services for Veteran Families (SSVF) program. The SSVF program is designed to prevent homelessness, and may reduce the incidence of homelessness among both male and female veterans. However, rigorous study of the SSVF program is needed.

Our analyses also revealed several important predictors of veteran homelessness. Namely, having a drug use disorder and not being married were the largest predictors followed by being low income, being Black, having an alcohol use disorder, and being ages 46–55. These predictors are consistent with those identified in systematic reviews of risk factors for homelessness among the general (Susser et al., 1993) and veteran populations (Tsai & Rosenheck, 2015). While substance abuse remains one of the most striking risk factors for homelessness, the exact pathways to homelessness remain unclear (G. Johnson & Chamberlain, 2008; T. P. Johnson, Freels, Parsons, & Vangeest, 1997). Certainly, substance abuse can be expensive (decreasing income for housing-related expenses) and cognitively impairing (leading to problems functioning like maintaining employment and paying rent), so the direct and indirect effects of substance abuse need to considered.

Several previous studies have also found that homeless veterans tend to be older than other homeless adults with the majority being over 45 years old but under 65 (Gamache, Rosenheck, & Tessler, 2001; Tsai, Kasprow, & Rosenheck, 2013; Tsai, Mares, & Rosenheck, 2012). Veterans in this age range may be particularly susceptible to homelessness due to "social selection" effects in the early years of the all-volunteer force (Gamache et

al., 2001), recent homeless outreach efforts prioritizing veterans who served in Iraq and Afghanistan (Tsai, Pietrzak, & Rosenheck, 2013), and health care and social security benefits available to nearly all American adults over 65.

The VA has implemented a two-item screening instrument for homelessness, which asks about housing status (Montgomery, Fargo, Byrne, Kane, & Culhane, 2013). Finding ways to incorporate information about known risk factors, such as those identified in this study, may be a useful way to further refine homeless screening procedures. Clearly, veterans with mental illness and substance use disorders are at elevated risk for homelessness, as are those with low income and who do not have loved ones in their lives for support. The VA's medical and administrative record systems have unique capabilities to measure homeless incidence and flag risk factors that may be useful in preventing future veteran homelessness.

From 2009 to 2014, veteran homelessness has reportedly declined by 33% (U.S. Department of Housing & Urban Development, 2014). However, dedicated resources, continued interventions, and careful monitoring are needed to maintain and track this progress. Examining the prevalence of veteran homelessness over time is important for measuring progress in ending homelessness, but measuring its incidence is necessary for evaluating the effectiveness of ongoing prevention efforts.

There are several study limitations to note. This was a retrospective cohort study that utilized VA administrative records which allowed for analysis of a large sample size of veterans, but the trade-off is that we were limited to the data captured by administrative records. We identified variables that preceded and were correlated with homelessness, which we called "predictors," but our research design precludes any causal inferences. Diagnostic data depended on the diligence and documentation of VA clinicians. There were other variables that were not analyzed, such as veterans' housing history, employment status, and social networks. We were limited to veterans engaged in VA care and so results may not generalize to veterans outside the VA system. We also did not examine homeless incidence per se, but defined homelessness as use of any VA homeless services or a documented V60.0 (Lack of housing) code.

These limitations are counterbalanced by the strengths of the study, which include a large sample, a cohort research design, clinician-documented psychiatric diagnoses, and results that inform continued efforts to prevent veteran homelessness. Community efforts to strive toward achieving "functional zero" is a worthy ideal, but needs to be supported by evidence-based infrastructure for prevention and monitoring.

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